

MODULAR CHEMICAL PRODUCTION SYSTEM INCORPORATING A MICROREACTOR

Abstract of the Disclosure

5 A modular chemical production system that preferably includes a
microreactor for producing a product by reacting two or more reactants.
Modularization enables components such as controllers, pumps, valves,
microreactors, and processing modules to be added or removed from the system as
required to produce a desired product. A minimum system includes a control module
and a reaction module, which has a mixing volume and a reaction volume. Various
10 pumping modules and residence time modules may also be included in the system.
Modules can be changed if malfunctioning, or for producing a different product, or to
change a quantity of the chemical produced. The control module preferably accesses
a database in which data define parameters for a plurality of different reactions that
are optimized for the production of different chemical products. The user selects the
15 product desired and the amount of the product, provides the reactants, solvents, and
heat transfer media supplies, and the control module operates the system to
automatically produce the product until the desired amount is obtained. The reaction
module preferably includes a microreactor, which can be replaced with a
microreactor of a different configuration to produce a different product. Connections
20 between modules are designed to enable quick connection and disconnection of
modules, and fluid lines are self sealing to prevent leakage of fluids when changing
modules.